REMARKS

Introduction

Claim 27 has been newly added, and therefore claims 1 to 27 are currently pending. Claims 20 and 23 have been amended to address informalities. No new matter has been presented. Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and following discussion.

Rejection of Claims 1-10 and 13-26[1] under 35 U.S.C. §102(e)

Claims 1-10 and 13-26 have been rejected under 35 U.S.C. §102(e) as anticipated by U.S. Patent No. 6,970,239 to Chan et al. (herein referred to as "Chan"). It is submitted that the Chan reference does not anticipate the subject matter of claims 1-10 and 13-26 for the reasons set forth below.

To reject a claim under 35 U.S.C. §102(b), the Office must demonstrate that each and every claim feature *is identically disclosed* in a single prior art reference. See Scripps Clinic & Research Foundation v. Genentech, Inc., 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991) (emphasis added). The identical invention must be shown in as complete detail as is contained in the claim. M.P.E.P. §2131.

Independent claim 1 recites an apparatus for identifying a chemical moiety from a sample solution that comprises (a) a substrate having a channel with *at least one array for capturing a chemical moiety from a sample solution*, and (b) a nanopore system *downstream from the substrate* for *identifying the chemical moiety received from the substrate channel after the chemical moiety has been released from the array*. It is submitted that Chan does not identically disclose these features, particularly since in Chan, the same device that captures the moiety also identifies the chemical moiety, so that one (the component that identifies) is not downstream of the other (the component that captures) as recited in the claim.

Chan refers to an enhanced Raman spectroscopy detection device in which porous silicon is covered with a layer of metallic nanoparticles to enhance sensitivity of Raman detection. See Chan, col. 2, lines 28-50. Since the metallic nanoparticles coated on the porous silicon act as miniature antennae for enhancing the localized effects of electromagnetic radiation (see Chan, col. 1, lines 48-51), in order for the target analyte to be

---

[1] The Office Action states that claims 1-10 and 13-25 were rejected; it is assumed that this is an error, and that the Examiner meant to apply this rejection to claim 26 as well.

detected by Raman spectroscopy, they have to be located at or extremely near the metal in order for the effect to be utilized.

For example, the text of Chan provides as follows:

> In certain embodiments of the invention. *one or more "capture" molecules may be attached either covalently or non-covalently to the Raman active substrate 240. 340 to enhance the sensitivity and/or specificity of Raman detection of analytes.* For example, an oligonucleotide probe specific for a selected target nucleic acid could be attached to the metal surface of the substrate 240, 340 by known techniques . . . . . *The presence of a target analyte may be detected by exposing the oligonucleotide attached to the substrate 240, 340* to a sample under conditions allowing for hybridization to complementary nucleic acid sequences.

(Chan, col. 14, lines 49-63; emphasis added). As the above paragraph explains, analytes are captured and bound to the Raman active substrate (which comprises the metallic nanoparticles), and the analytes are detected at the location they are captured by detecting the frequency-shifted light which is scattered from Raman active substrate. Thus, the analytes are captured and identified at the same location: there is no distinct upstream capture array versus a downstream nanopore system for identification as recited in claim 1. This is necessarily the case because the effects of Raman scattering cannot be taken advantage of unless the analyte is located near the metallic nanoparticles. This difference between the claimed subject matter and the teachings of Chan is significant in that the claimed subject matter provides for *spatially distinct capture and detection components* which adds flexibility since a detection unit can be used with more than one capture unit sequentially, for example.

For at least the reasons given above, it is submitted that Chan does not anticipate the subject matter of independent claim 1, which is therefore patentable over Chan.

As claims 2-9 and 13-23 depend from independent claim 1, they are likewise patentable over Chan.

As regards, independent claim 10, it recites a method for separating and identifying a chemical moiety the includes, *inter alia,* steps of: i) capturing the target molecule from the sample by contacting the target molecule to the probe; ii) releasing the target molecule from the probe in a defined order; and iii) identifying the target molecule by a nanopore system. As noted above, in the system disclosed in Chan, the target molecules are identified at the same location at which it is captured, and the metallic nanoparticles that coat the porous silicon function as both the site for the probe and the site for detection. Thus, in Chan, the

target molecule cannot be released prior to identification. Hence, Chan does not disclose (or even suggest) capturing a target molecule, followed by releasing the target molecule and identifying it in a nanopore system.

For at least these reasons, it is submitted that Chan does not anticipate the subject matter of independent claim 10, which is therefore patentable over Chan.

As claims 24-26 depend from independent claim 10, they are likewise patentable over Chan.

Rejection of Claims 11 and 12 under 35 U.S.C. §103(a)

Claims 11 and 12 have been rejected under 35 U.S.C. §103(b) as unpatentable over Chan.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974).

Claims 11 and 12 depend from and incorporate the features of independent claim 10. As discussed above, the Chan reference does not disclose or suggest the features of claim 10. Therefore, for at least the same reasons, the Chan reference does not render obvious the features of claims 11 and 12, which are therefore patentable over Chan.

New Claim 27

New claim 27 recites an apparatus for identifying a chemical moiety from a sample solution that comprises: (a) a substrate having a channel with at least one array for capturing a chemical moiety from a sample solution; and (b) a nanopore system downstream from the substrate for identifying the chemical moiety received from the substrate channel after the chemical moiety has been released from the array, the nanopore system including: i) an ion conducting channel; and ii) means for recording changes in conductance of ions across the channel.

New claim 27 is patentable over Chan for the reasons given above with respect to claim 1, and for the additional reason that Chan does not disclose or suggest in any way a nanopore system that includes an ion conducting channel or means for recording changes in conductance of ions across the ion conducting channel.

CONCLUSION

In view of all the above, it is believed that pending claims 1-27 are in allowable condition. It is therefore respectfully requested that the objections and rejections be withdrawn, and that the present application issue as early as possible.

Respectfully submitted,

Dated: 2/28/2006

By: Howard Grossman

Howard Grossman
Reg. No. 48,673

598 President St. Apt. 2E
Brooklyn, NY 11215
Phone/Fax: (718) 832-3674